IN THE CLAIMS:

The status of each claim that has been introduced in the above-referenced application is identified in the ensuing listing of the claims. This listing of the claims replaces all previously submitted claims listings.

1-33 (Canceled)

34. (Currently amended) A method for noninvasively estimating at least one of a pulmonary capillary blood flow and a cardiac output of a subject, comprising:

evaluating respiration of the subject during a first ventilation state having a duration of ~~about~~ approximately eighteen seconds to ~~about~~ approximately forty-two seconds; and

evaluating respiration of the subject during a second ventilation state having a duration of ~~about~~ eighteen seconds to ~~about~~ approximately forty-two seconds.

35. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the first ventilation state is conducted immediately before evaluating respiration of the subject during the second ventilation state.

36. (Previously presented) The method of claim 35, further comprising repeating evaluating respiration of the subject during another first ventilation state immediately following evaluating respiration of the subject during the second ventilation state.

37. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the first ventilation state is effected for about 30 seconds.

38. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the second ventilation state is effected for about 30 seconds.

39. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the first ventilation state is effected for a duration of at least about 30% of a combined duration of evaluating respiration of the subject during both the first ventilation state and the second ventilation state.

40. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the second ventilation state is effected for a duration of at least about 30% of a combined duration of evaluating respiration of the subject during both the first ventilation state and the second ventilation state.

41. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the first ventilation state and the evaluating respiration of the subject during the second ventilation state are effected for a combined duration of at most about two minutes.

42. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the first ventilation state comprises evaluating respiration of the subject during rebreathing.

43. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the first ventilation state comprises employing a best-fit line method of rebreathing.

44. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the second ventilation state comprises evaluating respiration of the subject while the subject is breathing air.

45. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the second ventilation state comprises evaluating respiration of the subject

while the subject is breathing gas or a gas mixture comprising at least a concentration of oxygen present in air.

46. (Previously presented) The method of claim 34, further comprising optimizing a duration of at least one of the first ventilation state and the second ventilation state.

47. (Previously presented) The method of claim 34, wherein evaluating respiration of the subject during the second ventilation state is effected before calculating the pulmonary capillary blood flow or cardiac output of the subject.

48. (Previously presented) The method of claim 34, wherein a transition between the first and second ventilation states is gradual.

49. (Previously presented) The method of claim 34, further comprising optimizing durations of the first and second ventilation states.

50. (Previously presented) The method of claim 49, wherein optimizing is based on ventilation of the subject.

51. (Previously presented) The method of claim 50, wherein optimizing is further based on at least one of a pulmonary capillary blood flow and a cardiac output of the subject.

52. (Currently amended) A method for noninvasively estimating at least one of a pulmonary capillary blood flow and a cardiac output of a subject, comprising:
evaluating respiration of the subject during a first ventilation state;
evaluating respiration of the subject during a second ventilation state immediately following the first ventilation state; and
evaluating respiration of the subject during another first ventilation state immediately following the second ventilation state, each of the first ventilation state, the second ventilation state,

and the another first ventilation state having a duration of ~~about~~ approximately eighteen seconds to ~~about~~ approximately forty-two seconds.

53. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the first ventilation state and the evaluating respiration of the subject during the second ventilation state are effected for substantially a same duration.

54. (Previously presented) The method of claim 53, wherein evaluating respiration of the subject during the another first ventilation state is effected for substantially the same duration.

55. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the first ventilation state is effected for about 30 seconds.

56. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the second ventilation state is effected for about 30 seconds.

57. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the another first ventilation state is effected for about 30 seconds.

58. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the first ventilation state is effected for at least about 30% of a combined duration of the evaluating respiration of the subject during the first ventilation state and evaluating respiration of the subject during the second ventilation state.

59. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the second ventilation state is effected for at least about 30% of a combined duration of the evaluating respiration of the subject during the first ventilation state and the evaluating respiration of the subject during the second ventilation state.

60. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the first ventilation state and the evaluating respiration of the subject during the second ventilation state are effected for a combined duration of at most about 2 minutes.

61. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the first ventilation state comprises evaluating respiration of the subject during rebreathing.

62. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the first ventilation state comprises employing a best-fit line method of rebreathing.

63. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the second ventilation state comprises evaluating respiration of the subject while the subject is breathing air.

64. (Previously presented) The method of claim 52, wherein evaluating respiration of the subject during the second ventilation state comprises evaluating respiration of the subject while the subject is breathing gas or a gas mixture comprising at least a concentration of oxygen present in air.

65. (Previously presented) The method of claim 52, further comprising optimizing a duration of at least one of the first ventilation state and the second ventilation state.

66. (Previously presented) The method of claim 52, wherein a transition between the second ventilation state and at least one of the first ventilation state and the another first ventilation state is gradual.

67. (Previously presented) The method of claim 52, further comprising optimizing durations of the first and second ventilation states.

68. (Previously presented) The method of claim 67, wherein optimizing is based on ventilation of the subject.

69. (Previously presented) The method of claim 68, wherein optimizing is further based on at least one of a pulmonary capillary blood flow and a cardiac output of the subject.

70. (Previously presented) A differential Fick technique, consisting essentially of:
a first phase in which a change in the effective ventilation of a subject is induced; and
a second phase following the first phase and during which a change in the effective ventilation of the subject is not present, the first phase and the second phase having substantially the same duration.

71. (Canceled)

72. (Previously presented) The differential Fick technique of claim 70, wherein the first and second phases each have a duration of about 30 seconds.

73. (Previously presented) The differential Fick technique of claim 70, wherein a duration of the first phase is at least about 30% of a combined duration of the first and second phases.

74. (Previously presented) The differential Fick technique of claim 70, wherein a duration of the second phase is at least about 30% of a combined duration of the first and second phases.

75. (Previously presented) The differential Fick technique of claim 70, wherein the first and second phases are repeated in immediate sequence with one another.

76. (Previously presented) The differential Fick technique of claim 70, wherein a combined duration of the first and second phases is at most about two minutes.

77. (Previously presented) The differential Fick technique of claim 70, wherein the first phase comprises a rebreathing phase and the second phase comprises a nonrebreathing phase.

78. (Previously presented) The differential Fick technique of claim 70, further comprising optimizing a duration of at least one of the first and second phases.

79. (Previously presented) The differential Fick technique of claim 70, wherein the second phase occurs before the first phase.

80. (Previously presented) The differential Fick technique of claim 70, wherein a transition between the first phase as the second phase is gradual.

81. (Previously presented) The differential Fick technique of claim 70, wherein durations of the first and second phases are optimized.

82. (Previously presented) The differential Fick technique of claim 81, wherein optimization of the durations of the first and second phases is based on ventilation of the subject.

83. (Previously presented) The differential Fick technique of claim 82, wherein the optimization is further based on at least one of a pulmonary capillary blood flow and a cardiac output of the subject.

84. (Currently amended) A differential Fick technique, comprising:

inducing a change in effective ventilation of an subject for a first duration of time of ~~about~~appoximately eighteen seconds to ~~about~~ approximately forty-two seconds;

removing the change in effective ventilation for a second duration of time of ~~about~~ approximately eighteen seconds to ~~about~~ approximately forty-two seconds immediately following the first duration of time; and

obtaining measurements of at least one respiratory gas and of respiratory flow during both the first duration of time and the second duration of time.

85. (Previously presented) The differential Fick technique of claim 84, further comprising repeating inducing immediately following the second duration of time.

86. (Previously presented) The differential Fick technique of claim 85, wherein repeating is again effected for the first duration of time.

87. (Previously presented) The differential Fick technique of claim 85, including obtaining measurements of the at least one respiratory gas and the respiratory flow during repeating.

88. (Previously presented) The differential Fick technique of claim 84, wherein the first duration of time of inducing and the second duration of time of removing are substantially the same.

89. (Previously presented) The differential Fick technique of claim 88, wherein the first duration of time of inducing is at least about 30% of a combined duration of the first the duration of time and the second duration of time.

90. (Previously presented) The differential Fick technique of claim 88, wherein the second duration of time of removing is at least about 30% of a combined duration of the first duration of time and the second duration of time.

91. (Previously presented) The differential Fick technique of claim 88, wherein inducing and removing are both effected for about 30 seconds.

92. (Previously presented) The differential Fick technique of claim 88, wherein a combined duration of inducing and removing is at most about two minutes.

93. (Previously presented) The differential Fick technique of claim 84, wherein inducing comprises causing the subject to rebreathe.

94. (Previously presented) The differential Fick technique of claim 84, wherein obtaining measurements comprises obtaining measurements of carbon dioxide in respiration of the subject.

95. (Previously presented) The differential Fick technique of claim 84, further comprising optimizing at least one of the first duration of time and the second duration of time.

96. (Previously presented) The differential Fick technique of claim 84, wherein a transition between inducing the change and removing the change is gradual.

97. (Previously presented) The differential Fick technique of claim 84, further comprising optimizing the first and second durations of time.

98. (Previously presented) The differential Fick technique of claim 97, wherein optimizing is based on ventilation of the subject.

99. (Previously presented) The differential Fick technique of claim 98, wherein optimizing is further based on at least one of a pulmonary capillary blood flow and a cardiac output of the subject.

100. (Previously presented) A method for noninvasively determining at least one of a pulmonary capillary blood flow and a cardiac output of a subject, comprising:
inducing a change in effective ventilation of the subject for a first period of time;
removing the change in effective ventilation of the subject for a second period of time, which is substantially the same as the first period of time, immediately following inducing; and
repeating inducing immediately following the second period of time.

101. (Previously presented) The method of claim 100, including obtaining measurements of at least one respiratory gas and respiratory flow during inducing and removing.

102. (Previously presented) The method of claim 101, wherein obtaining measurements comprises obtaining a measurement of at least carbon dioxide in respiration of the subject.

103. (Previously presented) The method of claim 100, wherein the first period of time of inducing and the second period of time of removing are substantially the same.

104. (Previously presented) The method of claim 100, wherein inducing comprises rebreathing.

105. (Previously presented) The method of claim 100, further comprising optimizing at least one of the first period of time and the second period of time.

106. (Previously presented) The method of claim 100, wherein a transition between inducing the change and removing the change is gradual.

107. (Previously presented) The method of claim 100, further comprising optimizing the first and second periods of time.

108. (Previously presented) The method of claim 107, wherein optimizing is based on ventilation of the subject.

109. (Previously presented) The method of claim 108, wherein optimizing is further based on at least one of a pulmonary capillary blood flow and a cardiac output of the subject.

110. (Currently amended) A method for noninvasively determining at least one of a pulmonary capillary blood flow and a cardiac output of a subject, comprising:

evaluating respiration of the subject during a first phase in which a change in effective ventilation of the subject is induced for a first period of time; and

evaluating respiration of the subject following removal of the change in effective ventilation of the subject; the removal being effected for a second period of time immediately following the first period of time, the first and second periods of time each lasting for ~~about~~ approximately eighteen seconds to ~~about~~ approximately forty-two seconds.

111. (Previously presented) The method of claim 110, further comprising repeating the first phase immediately following the second period of time and evaluating respiration of the subject during repeating.

112. (Previously presented) The method of claim 110, wherein evaluating respiration of the subject during the first phase and evaluating respiration of the subject following removal of the change in effective ventilation are effected for substantially the same duration of time.

113. (Previously presented) The method of claim 110, wherein each of evaluating respiration during the first phase and evaluating respiration following removal of the change comprises measuring at least one respiratory gas and respiratory flow of the subject.

114. (Previously presented) The method of claim 113, wherein measuring at least one respiratory gas comprises measuring at least respiratory carbon dioxide of the subject.

115. (Previously presented) The method of claim 110, wherein evaluating respiration of the subject during the first phase comprises evaluating respiration of the subject during rebreathing.

116. (Previously presented) The method of claim 110, further comprising optimizing at least one of the first period of time and the second period of time.

117. (Previously presented) The method of claim 110, wherein a transition between the first phase and the removal is gradual.

118. (Previously presented) The method of claim 110, further comprising optimizing the first and second periods of time.

119. (Previously presented) The method of claim 118, wherein optimizing is based on ventilation of the subject.

120. (Previously presented) The method of claim 119, wherein optimizing is further based on at least one of a pulmonary capillary blood flow and a cardiac output of the subject.